The EVM Hoax

A Program Leader's Bedtime Story

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About 20 years ago, a story surfaced about a substance called "dihydrogen monoxide." This compound was a major component of acid rain, deadly if inhaled, and often found in industrial solvents and nuclear power plants. Yet dihydrogen monoxide was also an excellent fire retardant and often found use as an additive to many food products in the supermarket! This story was a simple hoax that occasionally reappears on the web. For anyone with a basic chemistry background, "dihydrogen monoxide" is quickly recognized as H_2O. We call it water.

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When it comes to how we teach and train in the federal acquisition environment, the story of Earned Value Management (EVM) is not altogether different from the saga of dihydrogen monoxide. EVM is not a hoax, of course, but it often suffers unnecessarily, at one extreme, from the dismissive detractor who wishes to ignore its benefits and, at the other extreme, from those taken in by the tales of danger that EVM costs too much or is way too complex. One might wonder if those at the extremes of EVM are the same ones who did not do so well in high school chemistry!

In the minds of many federal acquisition professionals, EVM suffers from the unfortunate reputation as a system that requires excessive number-crunching and produces esoteric results that sometimes seem irrelevant to managing a program. Gold-card carrying EVM practitioners are often relegated to isolated corners of financial management shops where they can recite obscure passages from ANSI/EIA-748B while entering data into large, complex spreadsheets. Here, it is little wonder that EVM is far removed from the program manager's decision-making "inner circle." Even EVM training seems to reinforce the image that EVM is the territory of green-eye-shade accountants and Ouija-board mathematicians. It's little wonder that ordinary acquisition professionals approach EVM with pitchforks and torches. It is not uncommon to hear EVM descriptions, like:
- "EVM just won't work at our agency. We just don't have the expertise!"
- "Small businesses can't do EVM. It's too expensive."
- "EVM has too many acronyms and formulas to remember."
- "EVM software is confusing and too hard to use."
- "EVM is overkill for this contract because it costs too much and takes too long."
- "Our contractor does EVM; they send us CPI and SPI every month, so we don't need to do anything more."

Really?! We believe it is time for EVM to emerge from the dark recesses and be embraced for the powerful, interdisciplinary performance measurement tool that it is. EVM, simply put, is designed to be a leadership decision making tool. When used in this way, EVM has been quite successfully employed in acquisitions like the Navy's F/A-18 program, where strong leadership, an "interdisciplinary" common-sense approach, and discipline were the orders of the day.

Consider this: All successful programs, whether they realize it or not, employ some of the fundamental concepts and techniques of EVM. Pick up just about any project management book, and you cannot help but see concepts that might easily have been lifted straight out of an EVM manual. Here is a sample:
- Decomposition of complex systems into simple enough components to enable clarity and consistency in derivation of technical, schedule and cost objectives
- Linkage among these components and program functions and disciplines to create a single baseline with multiple but interdependent dimensions and views
- Proactive management of program performance, opportunity, and risk in relation to this baseline
- Empowerment and accountability for reasonable, repeatable, and defensible cost and schedule estimates at the lowest practical level of management

This hardly sounds like some esoteric bean-counting ritual.

Indeed, when embraced by program leadership and leveraged by all the functional disciplines, EVM allows you, your organization, and your stakeholders to have dependable and integrated visibility into the technical, cost, and schedule dynamics of projects.

As an example of how EVM might be used to drive program decisions, let's compare and contrast what might happen in a fictitious scenario of a program review with two very different leaders. The savvy PM embraces EVM and understands what

Reported "Metric"	Savvy PM Response	Uninterested PM Response
"We have a program CPI of 1.3."	"Hmm. You either front-loaded your baseline with meaningless work OR have substantial 'level of effort' earned value technique in there OR you need to publish a book called Best PM Practices Nobody Has Ever Discovered but Work Beyond All Imagination. Which is it?"	"Wow. That's in the green. Good job. Next slide, please. Better yet, is everyone okay if we just skip through the EVM slides and maybe get done an hour early today?"
"We have a program SPI of .98."	"Please don't just give me program information in SPI and CPI, and never, ever without showing me the actual integrated master schedule (IMS). I want you to tell me what is going on a level or two below the 'program level,' and we'll dive even deeper if there is a significant variance on my critical path tasks or in a big-ticket cost item."	
"We are 35 percent complete."	"Really? Does that mean 50 percent of your tasks are 70 percent complete; or 35 percent of your tasks are 100 percent complete? Let's talk about how many of the control account work packages are actually closed."	
"We completed our system requirements document last Tuesday."	"What does 'complete' mean here? 'Complete' because it weighs 3 pounds and you turned it in on time? Or 'complete' because all requirements are clear, unambiguous, verifiable, and traceable bi-directionally, complete in aggregate and accompanied with a verification matrix?'"	
"We have a schedule variance because we did not complete as much work as we planned."	"You are a master of the obvious. Please try that explanation one more time before you are 'unemployed because you no longer have a job.'"	
"Our EVM data show we are back on schedule with an SPI = 1.0."	"EVM doesn't give me schedule information. Only the integrated master schedule (IMS) gives me schedule information. Show me the IMS and what the critical path is looking like."	
"We no longer show a cost variance."	"That may be because you are burning down management reserve like there is no tomorrow. And that is poor planning. Let's talk."	
"We have recovered the work and now have no more schedule variance; we still have no cost variance."	"Cost variance always follows recovery of schedule variance. We'll see it soon enough. Plan accordingly."	
"Subsystem testing is complete."	"What does 'complete' mean? Did you meet all your test objectives? Is there re-work in our future?"	
"Our preliminary design review was completed last Thursday. Thanks for attending it."	"Your PDR can't be complete until all the exit criteria are satisfied. It is not a calendar-driven review. Show me how the EVM numbers reflect exit criteria completion. And if they can't reflect it, tell me: What exactly you are measuring these days?"	
"Our EAC is $1 million."	"We'll stop right here. Come back when you show me a best case and worst case along with it."	
"Our most likely EAC is $1 million. Worst case is $1.02 million. Best case is $996,000."	"Those numbers show such little variance; I don't know why we aren't making this firm-fixed price."	
"Our most likely EAC is $1 million. Worst case is $1.23 million. Best case is $975,000."	"Okay, you are trying. I see that. Very good. Now we can do some real decision-making and looking at trade space. Let's see how maybe we can aim to capture some opportunities. Show me how these numbers trace to the specific risks and the associated cost and schedule impacts. Let's start with your schedule risk analysis."	

she's being told; the other PM is, well let's say, less interested. How might the conversations go?

Earned value management, like dihydrogen monoxide—only seems bad to the uninformed. Indeed, the only danger of EVM comes when the program management team ignores it or relegates it to the dark recesses of the program office. The reality is that the disciplined insight and proactive decision-making enabled by EVM gives your program advance warning of problems in time to avert disaster. EVM data can empower leaders to know what kinds of questions to ask and recognize when the answers are insufficient.

In short, EVM is a powerful tool in the hands of a PM who knows how to use it. Dear reader, please do not panic at the sound of "EVM." Instead, learn to use it. The American warfighter and taxpayer deserve no less.